TOWARD THE SERVICE SCIENCE VIEW OF EDUCATION

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Abstract

This article applies the service science framework to education delivery at the university level. Educational programs are viewed as complex educational service systems that co-produce value for a variety of stakeholders. We introduce the Service Science Canvas, which is later adapted for the education industry and a specific case of an entrepreneurship program at a technological university in the United States. The Service Science Canvas highlights the common elements and principles of service systems.

Keywords: Entrepreneurship education; service systems; service science; academic program management; higher education.

1 INTRODUCTION

A popular view of the future of higher education suggests that university DNA must be infused with entrepreneurship (Christensen and Eyring 2011). This view suggests that at future universities, entrepreneurship will be part of all educational and research activities on campus (Fetters et al 2010; Welsh 2014; Graham 2014). Non-traditional approaches to education such as, for example, online self-paced courses and competency-based certifications will help universities to contain the escalation of costs and tuition, increase global competitiveness of existing universities and increase accessibility of education. Entrepreneurship infusion in educational programs will also prepare students for the changing labor market.

Entrepreneurship education teaches skills required for new venture creation. Entrepreneurship skills are also desired by established companies. Companies now require T-shaped professionals with the depth of knowledge in at least one discipline and with the breadth of knowledge that allows them to innovate and acquire new in-depth knowledge as needed (Murphy 2011; Barile et al. 2012). Entrepreneurship skills are poised to become more relevant in the future as automation eliminates job security (Brynjolfsson and McAfee 2014), and we are moving toward a “gig economy” (Mulcahy 2017).

Spreading entrepreneurship across campus, however, is difficult (Nelson & Lumsdaine, 2008; Morris et al., 2014; Roberts et al., 2014). Challenges include resistance from administrators, faculty, alumni and staff (Morris et al. 2014; Fetters et al., 2010). University stakeholders may view entrepreneurial aspirations of a university as interfering with its fundamental academic mission (Lucas, 2006; Kaplin & Lee, 2007). One of the fears is that university-industry alliances may stifle the free flow of information and encourage research that focuses more on commercial feasibility rather than academic scholarship (Fetters et al., 2010). Poor coordination among participants and inadequate resources may stifle entrepreneurship programs (Morris et al. 2014; Fetters et al., 2010). A successful entrepreneurship program requires an ecosystem of a regional network of stakeholders and resources for supporting entrepreneurs (Fetters et al. 2010; Graham 2014).

There are many descriptions in the literature of successful and not-so-successful academic entrepreneurship programs. How can we compare these academic programs? How do we highlight what factors led to a long-term success or a demise of an academic program? As entrepreneurship education has expanded globally, there have been call to examine patterns of program development within universities (Garland 2000; Welsh 2014; Graham 2014). Analysis of entrepreneurship programs still lacks a unifying framework.
The service science approach can be applied to the provision of education (Spohrer et al. 2007; Lella et al. 2012). Observers of higher education have recognized that universities are complex institutions (Christensen and Eyring 2011). Universities can be seen as "knowledge factories" undergoing a rapid transformation and the service science is well positioned to be the framework for understanding this evolution (Spohrer et al. 2013). The service science framework facilitates the identification of common factors among diverse academic programs.

The service science approach describes service systems in terms of 10 elements and principles (Spohrer et al. 2007). We organize these elements and principles into a one-page visual aid we call the Service Science Canvas. The Service Science Canvas is a matrix consisting of 10 blocks, which correspond to the 10 elements that describe a service system. The inspiration for the Service Science Canvas comes from the Business Model Canvas by Osterwalder and Pigneur (2010), which has gained in popularity as a planning and visualization tool in the entrepreneurship community and entrepreneurship literature (see strategyzer.com for examples). As a generic service science template, the Service Science Canvas can be used to guide the description of any service system. In this article, we apply the Canvas to the education industry and then apply it to a specific case.

The following section defines the Service Science Canvas. The Service Science Canvas can be adapted for an educational program, which we do in the full version of the article.

2 THE SERVICE SCIENCE CANVAS

The service system is the foundational concept of service science (Spohrer et al., 2007). A service system is an abstraction that represents a dynamic network of resources for producing and delivering value to stakeholders. Firms, employees, business units, cities, government agencies, and nations are service systems. The service science identifies 10 elements and principles common to service systems. For convenience, we present them as the Service Science Canvas (Figure 1). Below we describe the 10 blocks of the Service Science Canvas, which correspond to the service science elements and principles.

2.1 Resources

A resource is anything that can be used in service production. People, technology, information and organizations are resources (Spohrer et al., 2007; Chen et al., 2008, p. 122). In market economies, financial resources may be used to gain access rights to physical, human or intellectual resources.

2.2 Access Rights

Resource availability is determined by access rights (Spohrer et al., 2008). The service science approach differentiates between four fundamental access rights: leased, owned, shared, and privileged. A rented car is an example of a leased resource. Private property is owned. Shared access rights direct the use of air and roads. Knowledge is a resource with privileged access rights.

2.3 Entities

Service systems consist of entities, which are resource configurations capable of value creation (Spohrer et al., 2008; Spohrer and Kwan 2009). Entities are dynamic, as they emerge and disappear. Entities can be formal or informal (Maglio et al., 2009).
2.4 Stakeholders

Stakeholders are the parties, which are impacted by service interactions (Spohrer et al., 2008). Based on their roles, service science specifies four fundamental stakeholder types: customer, provider, authority and competitor. Customers are the consumers of the service. Providers offer resources to service systems. Authorities ensure compliance with rules and laws. Competitors are alternative producers of services, their existence drives innovation.

2.5 Value Co-Creation

Successful service systems create value through collective efforts of stakeholders (Chen et al., 2008). Stakeholder participation in value co-creation activities builds up confidence and trust in the service system, which is crucial for its long-term successful operation.

2.6 Networks

Networks refer to patterns of interactions between service systems and between entities in service systems (Spohrer et al., 2008; Barile and Polese 2010; Lyons and Tracy 2012). Examples of interactions that occur over networks are governance interactions between the authority entity and other entities, or the exchange of skills and knowledge between stakeholders.

2.7 Ecology

Service systems and service entities constitute the service system ecology (Spohrer et al., 2008; Spohrer & Kwan, 2009; Lyons & Tracy, 2012). Ecologies may contain different numbers and types of service systems and entities. An ecology may include a variety of resource access rights, network patterns, and governing arrangements.
2.8 Governance

Governance mechanisms direct service systems towards certain objectives. Examples of governance mechanisms are informal social norms, formal contracts, laws, and regulations (Spohrer et al., 2008). Governance mechanisms reduce ambiguity and ensure viability and efficiency of service systems (Spohrer et al., 2008; Barile & Polese, 2010; Lyons & Tracy, 2012).

2.9 Outcomes

Activities of service systems lead to outcomes. The main outcome is the value for customers. Additional outcomes include contracts between systems, entities, and stakeholders, disputes resolved or unresolved and so forth (Spohrer et al., 2008; Maglio et al., 2009). Outcomes may be intended or unintended.

2.10 Measures

Stakeholders evaluate the performance of a service system against benchmarks, which are important to them. To monitor the service system performance, its activities must be measured. The service science framework identifies four primary types of measures: quality, productivity, compliance and sustainable innovation (Spohrer et al., 2008).

The Service Science Canvas can be adapted for service industry verticals and applied to specific cases within that industry (Figure 2). Examples of verticals are education, banking, and tourism. In the full version of the article, we develop the Service Science Canvas for entrepreneurship education.

![Figure 2: The Service Science Canvas can be adapted for an industry vertical and applied to specific cases.](image)

3 CONCLUSION

University programs in entrepreneurship are notoriously difficult to establish and sustain. This article examines entrepreneurship programs using the framework of service science. We present an
entrepreneurship program as a complex educational service system that co-produces value for its stakeholders.

The service science theory creates a framework that helps us understand how to build sustainable academic programs. It stresses the importance of value co-creation principle and the importance of finding adequate measures. Systems planning of an academic program is required in order to avoid many potential problems and risks associated with the implementation of an educational program. The service science framework offers a vocabulary and the structure for comparing diverse entrepreneurship programs.

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REFERENCES


